

Application Number 10/705,677
Responsive to Office Action mailed December 1, 2005

REMARKS

This amendment is responsive to the Office Action dated December 1, 2005. Applicant has amended claims 1, 3, 5, 10, 14, 17, 20, 26, and 27. Claims 1-27 are pending upon entry of this amendment.

Claim Rejection Under 35 U.S.C. § 112

In the Office Action, the Examiner rejected claims 5 and 10 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant has amended claims 5 and 10 for purposes of clarification. For example, the phrase "the other one of the tag detection signal or the patron signal than was initially received" finds sufficient antecedent basis in the language "upon receiving either of the tag detection signal or the patron signal" of claim 10. It would be clear to one of ordinary skill in the art that claim 10 requires the controller to initiate a timer upon receiving either of the tag detection signal or the patron signal, and output the alarm signal upon receiving whichever of the tag detection signal or the patron signal was not received when the timer was initiated. Applicant submits that claims 5 and 10, as amended, particularly point out and distinctly claim the subject matter, as required by 35 U.S.C. 112, second paragraph.

Claim Rejection Under 35 U.S.C. § 103

In the Office Action, the Examiner rejected claims 1-8, 11-12, 14-18, 21-23 and 25 under 35 U.S.C. 103(a) as being unpatentable over Kaltner (US 5,126,749) in view of Maimann et al. (US 4,635,041). In addition, the Examiner rejected claims 9-10 and 19-20 under 35 U.S.C. 103(a) as being unpatentable over Kaltner in view of Maimann et al. in Claim 1 above, and further in view of Lizzi et al. (US 5,030,941). The Examiner also rejected claims 13 and 24 under 35 U.S.C. 103(a) as being unpatentable over Kaltner in view of Maimann et al., and further in view of Durec et al. (US 6,487,395). Lastly, the Examiner rejected claims 26 and 27 under 35 U.S.C. 103(a) as being unpatentable over Maimann et al. in view of Lizzi et al.

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Applicant respectfully traverses the rejection. The applied references fail to disclose or suggest the inventions defined by Applicant's claims, and provide no teaching that would have suggested the desirability of modification to arrive at the claimed invention.

Claims 1-14

Applicant's claim 1 recites a system comprising a plurality of radio frequency (RF) antennas set up to provide one or more interrogation corridors, and a RF reader coupled to the plurality of antennas, the RF reader having a single transmitter/receiver port that provides each of the antennas with RF power to produce interrogation fields within the interrogation corridors and delivers a combined input signal to the RF reader. The cited references, either singularly or in combination, fail to teach or suggest the use of a single transmitter/receiver port that provides RF power to a plurality of RF antennas to produce interrogation fields within the interrogation corridors.

In the Office Action, the Examiner correctly recognized that Kaltner does not specifically disclose an RF reader coupled to the plurality of antennas, wherein the RF reader includes a transmitter/receiver port that provides each of the antennas with RF power to produce interrogation fields within the interrogation corridors. The Examiner sought to overcome Kaltner by citing Maimann et al. In particular, the Examiner asserted that Maimann et al. at col. 2, lines 55-59 discloses that the transmitter antenna and receiver antenna can be modified as a single transmitter/receiver antenna system, which functions as both a transmitting and receiving antenna. The Examiner then concluded that:

[I]n the result of the transceiver modification above the associate components (splitter and combiner) of Kaltner or (Rec. Mux and Trans Mux) of Maimann can be combined in a single device, and only one port or connector is required to connect from the splitter/combiner unit to the reader. It would have been obvious of one having ordinary skill in the art at the time of the claimed invention to modify the transceiver antenna as taught by Maimann into the system of Kaltner, for the benefit of less labor cost for installing transmitter and receiver on both side of the corridor, while transceiver requires only one side of corridor.¹

Based on these comments, it appears the Examiner may have overlooked the fact that neither Kaltner nor Maimann et al., either singularly or in combination, discloses or suggests the use of a single transmitter/receiver port on a single RF reader to produce the interrogation fields

¹ Office Action dated December 1, 2005, at page 3.

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as well as receive detection signals, as is disclosed by Applicant's claim 1. As recognized by the Examiner, Kaltner fails to teach or suggest such a feature. Further, the portion of Maimann et al. referred to by the Examiner merely describes a single *antenna* that both transmits and receives. Maimann et al. goes on to describe that each antenna is connected to a transmitting multiplexer 5 and a receiving multiplexer 6, which are connected on the other side to a transmitter 7 and a receiver 8, respectively. (Col. 2, ln. 64 –col. 3, ln 1). Thus, even Maimann et al. teaches a separate transmitter and receiver, each with its own port, instead of a single transmitter/receiver port that both drives a plurality of antennas as well as receives a detection signal from the antennas, as recited by claim 1. As a result, in no way does Maimann et al. in view of Kaltner teach or suggest utilizing a single transmitter/receiver port to provide RF power to a plurality of antennas to produce multiple interrogation fields.

With respect to claim 3, the Examiner did not expressly address the limitations of claim 3. Applicant's claim 3 further requires that the claimed splitter receives one or more input signals from the plurality of antennas and combines the one or more tag signals to form the combined input signal for delivery to the T/R port of the RF reader. Thus, when viewed in the context of claim 2, Applicant's claim 3 requires a splitter that performs dual functions: (1) delivering RF power to each of a plurality of antennas to produce multiple interrogation fields, and (2) receiving one or more input signals from the plurality of antennas and combining the tag signals to form a combined input signal for delivery to the T/R port of the RF reader. Neither Kaltner nor Maimann et al. teaches or suggests a splitter that performs these dual functions. Instead, Kaltner clearly teaches a separate splitter and combiner (see, e.g., FIG. 1), and Maimann et al. discloses a separate receiving multiplexer and transmitting multiplexer (see, e.g., FIG. 1). Thus, Kaltner in view of Maimann et al. fail to teach a bi-directional splitter capable of performing both of the functions required by Applicant's claim 3.

With respect to claim 14, Kaltner in view of Maimann et al. fails to teach or suggest a single T/R port that simultaneously provides each of the antennas with the RF power and accepts a signal produced by an RF tag in any of the interrogation corridors. To the contrary, as discussed above, Kaltner and Maimann et al. specifically require separate transmit and receive ports. Thus, Kaltner in view of Maimann et al. in no way teaches or suggests the use of a single T/R port of an RF reader that simultaneously provides each of the antennas with the RF power

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and accepts a signal produced by an RF tag in any of the interrogation corridors, as required by Applicant's claim 14.

Claims 15-24

Applicant's claim 15 requires producing a radio frequency (RF) output signal from a single transmitter receiver (T/R) port of an RF reader, splitting the RF output signal into a plurality of antenna drive signals, and delivering the antenna drive signals to a plurality of antennas to produce interrogation fields within one or more interrogation corridors.

In rejecting claim 15, the Examiner merely refers to the rejection of the preceding claims over Kaltner in view of Maimann et al. However, as discussed above, neither Kaltner nor Maimann et al., either singularly or in combination, teach or suggest producing an RF output signal from a single T/R port of an RF reader. In contrast, both Kaltner and Maimann et al. teach antennas separately connected to a transmitter and a receiver.

For at least these reasons, Kaltner in view of Maimann et al. fails to teach or suggest producing a radio frequency (RF) output signal from a single transmitter receiver (T/R) port of an RF reader, splitting the RF output signal into a plurality of antenna drive signals, and delivering the antenna drive signals to a plurality of antennas to produce interrogation fields within one or more interrogation corridors, as required by claim 15.

Claims 16-24 are dependent on claim 15 and patentable for at least the reasons set forth above with respect to claim 15. None of the additional references cited by the Examiner overcome the deficiencies of Kaltner and Maimann et al. set forth above.

Claim 25

Applicant's claim 25 recites an exit control system for detecting unauthorized removal of articles from a protected area, the exit control system comprising a plurality of antennas oriented to provide interrogation corridors, and an RF reader that provides RF power to the antennas to produce interrogation fields in the interrogation corridors, wherein the RF reader interrogates the plurality of antennas using a single port to transmit RF power to the antennas and to receive tag signals from the antennas at the single port.

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In rejecting claim 25, the Examiner again relied on Kaltner in view of Maimann et al. However, neither Kaltner nor Maimann et al., either singularly or in combination, teach or suggest the use of a single port to transmit power to a plurality of antennas and to receive tag signals from the plurality of antennas. In contrast, Kaltner specifically describes transmit antennas connected via a splitter to a transmitter, separate from receiver antennas connected via a combiner to a receiver. Kaltner makes no mention of a single port capable of performing both transmitting and receiving functions. Maimann et al. describes that the antennas are connected via a transmitting multiplexer to a transmitter and connected via a receiving multiplexer to a receiver. Both Kaltner and Maimann et al. describe the use of separate transmitters and receivers, and therefore do not teach or suggest utilizing a single port to transmit RF power to the antennas and to receive tag signals from the same antennas at the single port, as required by Applicant's claim 25.

Claims 26-27

The Examiner rejected claims 26 and 27 under 35 U.S.C. 103(a) as being unpatentable over Maimann et al. in view of Lizzi et al.

Applicant's amended claim 26 requires, in part, outputting RF power from a reader to a plurality of antennas through a single transmitter/receiver (T/R) port to produce interrogation fields within a plurality of interrogation corridors, receiving from the T/R port a combined tag detection signal that indicates at least one tag is present within any of the plurality of interrogation corridors, receiving a patron signal that indicates at least one patron is present within any of the interrogation corridors, and outputting an alarm signal upon receiving the tag detection signal and the patron signal within a time period.

In rejecting claim 26, the Examiner relied on Maimann et al. in view of Lizzi et al. However, neither Maimann et al. nor Lizzi et al., either singularly or in combination, teach or suggest the use of a single transmitter/receiver port through which to output RF power from a reader to a plurality of antennas, and from which a combined tag detection signal is received. As described above, Maimann et al. teaches that the antennas are connected via a transmitting multiplexer to a transmitter and connected via a receiving multiplexer to a receiver. Lizzi et al. describes the use of a separate transmitting antenna and a separate receiving antenna, respectively

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attached to a transmitter 4 and a receiver 7 that are physically separate. (See, e.g., Lizzi et al. at FIG. 1.; col. 3, ll. 52-65). Lizzi et al. makes no mention of a single port capable of performing both transmitting and receiving functions. Both Maimann et al. and Lizzi et al. describe the use of separate transmitters and receivers, and therefore do not teach or suggest outputting RF power from a reader to a plurality of antennas through a single transmitter/receiver (T/R) port, or receiving from the T/R port a combined tag detection signal, as required by Applicant's claim 26.

For at least these reasons, the Examiner has failed to establish a prima facie case for non-patentability of Applicant's claims 1-27 under 35 U.S.C. 103(a). Withdrawal of this rejection is requested.

CONCLUSION

All claims in this application are in condition for allowance. Applicant respectfully requests reconsideration and prompt allowance of all pending claims. Please charge any additional fees or credit any overpayment to deposit account number 50-1778. The Examiner is invited to telephone the below-signed attorney to discuss this application.

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February 28, 2006

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